

PATENT SPECIFICATION



710,809

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COMPLETE SPECIFICATION

Device for Electric Rail Brakes

We, AKTIEBOLAGET EKSJOVERKEN, a Swedish Joint Stock Company, of Eksjö, Sweden, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for electric rail brakes for rail vehicles.

10 The object of the invention is to provide a suspension for rail brakes which will eliminate brake judder, does not use wearable parts, and which is capable of holding the brake in an inoperative position, but allows 15 a movement of the same both vertically and about its longitudinal axis to secure a complete contact with the rail.

The invention is characterised in that the rail brake is carried by at least one elastic 20 resilient element of rubber or like material, allowing displacement of the rail brake in the vertical direction as well as the turning of the same about a longitudinal axis and furthermore absorbing the braking forces in 25 such a manner that the resilient elements undergo a deformation when the brake is applied and assume their original shape when the brake is released, simultaneously restoring the rail brake to its inoperative 30 position.

For a better understanding of the invention and to show how it may be carried into effect, the same will now be described in the accompanying drawings, in which:

35 Fig. 1 shows an embodiment of the invention with the brake in neutral position;

Fig. 2 shows a partial elevation of the brake in braking position;

Fig. 3 is an end view of the rail brake, 40 partly in section;

Fig. 4 is a rubber element; and

Fig. 5 shows a modification of the invention.

Referring now to the drawing, Fig. 1 45 shows a rail brake 1 suspended in the bogie [Price 2/8]

or chassis 3 of a vehicle by means of two rubber elements 2 (shearing springs). The rubber elements 2 may have round, square or any desired cross-section, and have one end 4 secured to the rail brake, while their other 50 end 5 is secured in bracket 6 or the like fastened to the bogie or chassis.

While Fig. 1 shows the brake in its inoperative position, the brake in Fig. 2 is in its operating position, resting against the rail 7. 55 As will be obvious, the braking forces are transmitted from the rail brake 1 to the bogie or chassis 3 in such a way that one of the elements 2 is subjected to a pull, whereas the other element is compressed. 60

Fig. 3 is an end view of the rail brake with the rubber member 2 in cross-section. It appears clearly from the figure that—by a small twisting action applied to the rubber —the brake will easily adjust itself to the 65 top side of the rail transversally to the vehicle. To facilitate this twisting action, the centre line 8 of the rubber elements should be located as near as possible to the horizontal gravity centre axis 9 of the rail 70 brake, i.e., the centre line 8 of the rubber element and the gravity centre axis 9 of the rail brake should preferably coincide in the vertical direction.

Fig. 4 shows an embodiment of the rubber 75 element 2. The numeral 10 designates two plates provided with cavities 11 into which the rubber is vulcanized. One of the plates 10 is fastened to the rail brake 1 while the other is secured to the bracket 6, preferably 80 by means of a vertically displaceable support or the like 12. At the rubber element attachment in the rail brake is a plate or the like 13, to which the plate 10 is secured. A vertically adjustable pin 14 set into the plate 85 13 forms a safety device in case the rubber should happen to break. The support 12 is provided with a protruding portion 18 which has a groove or recess 15 in which the pin 14 moves during the movements of 90

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the rail brake. An elongate slot 16 is provided in the plate 13 for vertical adjustment of the pin 14. To allow vertical adjustment of the brake relative the rail and adjustment after turning of the wheels, the support 12 may be adjustably mounted on the bracket 6, for instance, by means of a groove 17 and tightening bolts, which may run in elongate slots. To absorb the braking forces in case they should exceed the strength of the rubber elements or to save the elements from great stresses, the support 12, as previously stated, is provided with a protruding portion 18, against which the plate 13 on the rail brake will come to rest before the stresses on the rubber 2 become too great.

In the modification of the invention shown in Fig. 5, the rubber element is formed as a vertically working compression spring 19 having one portion 20 secured to the rail brake and the other portion 21 secured to a pin or the like 22 projecting downwards from the bogie or chassis. It will be apparent that this arrangement may be reversed if desired so that the pin 22 is set into the rail brake and the outer portion 20 is secured to the bogie or chassis. Also in this embodiment the braking forces are absorbed partly by compression and partly by extension of the rubber elements 19, which also allows the rail brake to turn very easily about its longitudinal axis 9 and adjust itself to the rail. There is a certain play between the pin 22 and the outer portion 20, dimensioned in accordance with the resistance of the rubber against the braking forces. If the braking forces should become extraordinarily great, the pin 22 will come to rest against an edge 23 on the portion 20. The inner portion 21 of the rubber element may rest on a washer 24, secured to the pin 22. To ensure that the brake does not fall down if the rubber breaks, the washer 24 may have so large a diameter that in such a case the portion 20 will come to rest against the washer.

The inner portion 21 may be provided with a collar or be made so thick that the upper side of the portion 20 will rest against the same.

It will be apparent that the present device means a high degree simplification of the construction used hitherto, the latter having coil springs holding the rail brake and cubes or links for absorbing the braking forces, while in this device the rubber elements are serving all these purposes.

It will also be apparent that the present device may be used for so-called high suspension of the rail brake, wherein the brake is held lifted by means of air cylinders, electromagnets or the like. It will merely be a question of the dimensioning of the rubber elements.

What we claim is:—

1. Rail brakes for rail vehicles, wherein each rail brake is carried by at least one elastic resilient element of rubber or the like material allowing displacement of the rail brake in the vertical direction as well as the turning of the same about a longitudinal axis and furthermore absorbing the braking forces in such a manner that the resilient elements undergo a deformation when the brake is applied and assume their original shape when the brake is released, simultaneously restoring the rail brake to its initial, inoperative position.

2. Rail brakes as claimed in Claim 1, wherein each rail brake is suspended by two elastic elements fastened partly to the rail brake through the intermediary of plates mounted thereon, and partly in brackets secured to the bogie of the vehicle through the intermediary of supports adjustably mounted on said brackets.

3. Rail brakes as claimed in Claims 1 or 2, wherein the elements are adapted to work with shear in the vertical direction and with compression or tension in the horizontal position.

4. Rail brakes as claimed in Claims 1, 2, or 3, wherein each end of the rail brake is provided with a protruding portion resting against a member provided on the bogie of the vehicle, to thereby limit the movements of the rail brake downwards and laterally.

5. Rail brakes as claimed in Claims 1, 2, 3, or 4, wherein the elements are made in the form of two plates having rubber vulcanized between them, one of the plates being fastened to the rail brake through the intermediary of a plate mounted on the same, the other plate being fastened to a bracket, projecting from the bogie of the vehicle through the intermediary of an adjustable support mounted on said bracket.

6. Rail brakes as claimed in Claim 1, 2, 3, 4, or 5, wherein the rail brake is provided with portions projecting therefrom and detachably fastened to the rail brake, said parts limiting the compression and tensioning of the elements when the brake is applied such that they come to rest against parts projecting from the bogie.

7. Rail brakes as claimed in any of the preceding claims, wherein the rail brake is held elevated in a higher position above the rail than it would be by the rubber member by means of at least one air cylinder or the like.

8. Rail brakes for rail vehicles substantially as hereinbefore described with reference to the accompanying drawings.

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1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

Fig 1

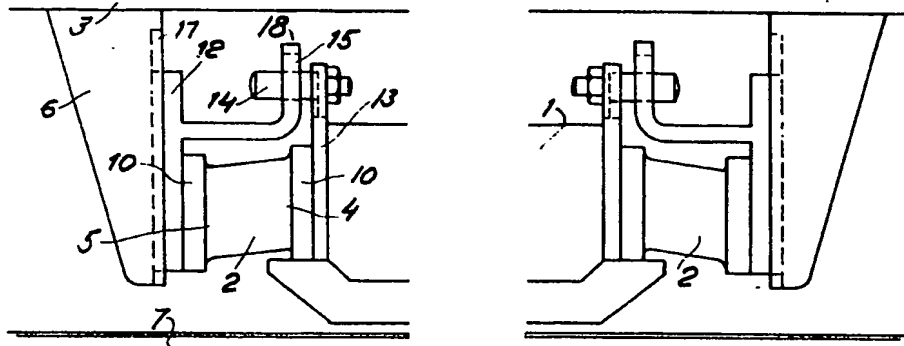


Fig 2

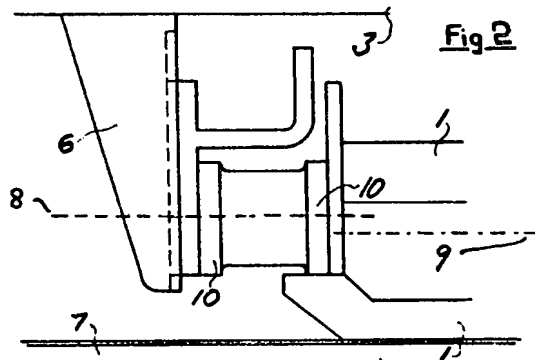


Fig 3

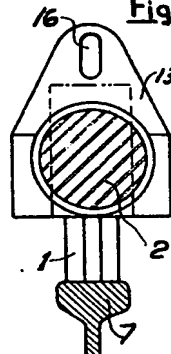


Fig 4

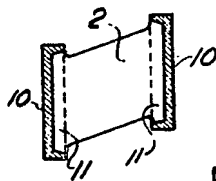
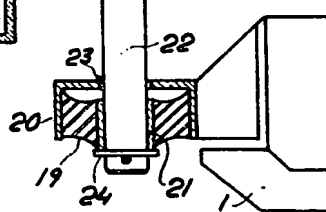


Fig 5



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